

Abstract of the Disclosure

In addition to a pilot signal for the conventional operating point control, a second pilot signal with a different frequency is superimposed on an optical signal. Then, the modulation component of an optical signal corresponding to the second pilot signal is detected from the output of an external modulator, the phase of the modulation component of the optical signal is compared with the phase of the second pilot signal, and as a result, an amplitude is obtained. The amplitude of a signal indicating a phase difference obtained when the amplitude of the driving waveform of the external modulator is different from the $V\pi$ of the external modulator is detected, using the amplitude of the signal indicating the phase difference obtained when the amplitude of the driving waveform is the same as $V\pi$, as a reference, and the amplitude of the driving waveform.